CLAIMS

1. A thin film transistor comprising (i) a semiconductor layer, which faces a gate electrode via a gate insulation layer, (ii) a source electrode and a drain electrode, which are electrically connected with the semiconductor layer, and (iii) a channel section between the source electrode and the drain electrode, wherein:

the source electrode and the drain electrode are formed by applying a droplet of an electrode raw material, and have a branch section at branching-off parts thereof located off a forming area of the semiconductor layer, the branch section including a plurality of branch electrodes, at least part of which are in a forming area of the semiconductor layer, the branch electrodes of the source electrode and the branch electrodes of the drain electrode being alternately arrayed.

2. The thin film transistor as set forth in Claim 1, wherein:

location of the branching-off parts as drop-on positions on which the droplet is to be applied is so set that the droplet is applied on the channel section, based on allowance in applying the droplet on the drop-on positions for forming the branch electrode section by applying the droplet.

3. The thin film transistor as set forth in Claim 1, wherein:

each branch electrode has a parallel part being parallel to each other within the forming area of the semiconductor layer, each branch electrode being linear between the parallel part and the branching-off part.

4. The thin film transistor as set forth in Claim 1, wherein:

at least one of the source electrode and the drain electrode has a part that gets gradually wider toward the forming area of the semiconductor layer.

5. The thin film transistor as set forth in Claim 4, wherein:

the source electrode and the drain electrode have ends respectively that are closer to the semiconductor layer; and

the part that gets gradually wider is located between one of the branching-off parts and one of the ends.

6. The thin film transistor as set forth in Claim 1, wherein:

the channel section has a width not longer than a length of the branch electrode sections.

7. The thin film transistor as set forth in Claim 1, wherein:

the branch electrodes of the source electrode, or the branch electrodes of the drain electrode are so arrayed that a gap between each adjacent pair of the branch electrodes gets wider as the branch electrodes are extended toward the channel section from the branching-off parts.

8. The thin film transistor as set forth in Claim 7, wherein:

the semiconductor layer has a substantially circular pattern whose diameter is larger than a width part of the gate electrode located on the channel section.

9. The thin film transistor as set forth in Claim 1, wherein:

the semiconductor layer has a substantially circular pattern whose diameter is larger than a width part of the gate electrode located on the channel section; and

an end of each branch electrode is within the width part of the gate electrode, but does not go beyond the width part of the gate electrode.

10. A thin film transistor comprising (i) a semiconductor layer, which faces a gate electrode via a gate insulation layer,

(ii) a source electrode and a drain electrode, which are electrically connected with the semiconductor layer, and (iii) a channel section between the source electrode and the drain electrode, wherein:

the source electrode is continuous with a source wire via a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part; and

the source transition part and the drain transition part are located off a forming area of the semiconductor layer; and

the source transition part gets wider gradually from the source wire toward the forming area of the semiconductor layer, and/or the drain transition part gets wider gradually from the drain wire toward the forming area of the semiconductor layer.

11. A thin film transistor comprising:

a substantially circular semiconductor layer provided on a linear gate wire, the semiconductor layer partially covering the linear gate wire, and sandwiching a gate insulation layer with the linear gate wire;

a source electrode and a drain electrode on the semiconductor layer;

a channel section between the source electrode and the drain electrode;

the source electrode is continuous with a source wire via

a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part; and

the source transition part and the drain transition part are located off a forming area of the semiconductor layer.

12. A liquid crystal display apparatus comprising a thin film transistor, wherein:

the thin film transistor includes (i) a semiconductor layer, which faces a gate electrode via a gate insulation layer, (ii) a source electrode and a drain electrode, which are electrically connected with the semiconductor layer, and (iii) a channel section between the source electrode and the drain electrode,

the source electrode and the drain electrode being formed by applying a droplet of an electrode raw material, and having a branch section at branching-off parts thereof located off a forming area of the semiconductor layer, the branch section including a plurality of branch electrodes, at least part of which are in a forming area of the semiconductor layer, the branch electrodes of the source electrode and the branch electrodes of the drain electrode being alternately arrayed.

13. A liquid crystal display apparatus comprising a thin film transistor including (i) a semiconductor layer, which faces a gate electrode via a gate insulation layer, (ii) a source

electrode and a drain electrode, which are electrically connected with the semiconductor layer, and (iii) a channel section between the source electrode and the drain electrode, wherein:

the source electrode is continuous with a source wire via a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part;

the source transition part and the drain transition part are located off a forming area of the semiconductor layer; and

the source transition part gets wider gradually from the source wire toward the forming area of the semiconductor layer, and/or the drain transition part gets wider gradually from the drain wire toward the forming area of the semiconductor layer.

14. A liquid crystal display apparatus comprising a thin film transistor, wherein:

the thin film transistor includes:

a substantially circular semiconductor layer provided on a linear gate wire, the semiconductor layer partially covering the linear gate wire, and sandwiching a gate insulation layer with the linear gate wire;

a source electrode and a drain electrode on the semiconductor layer;

a channel section between the source electrode and the

drain electrode;

the source electrode is continuous with a source wire via a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part; and

the source transition part and the drain transition part are located off a forming area of the semiconductor layer.

15. A manufacturing method of a thin film transistor, including (i) a semiconductor layer on a gate electrode, (ii) a gate insulation layer between the semiconductor layer and the gate electrode, (iii) a source electrode and a drain electrode on the semiconductor layer, and (iv) a channel section between the source electrode and the drain electrode, the manufacturing method comprising the steps of:

preprocessing so as to form an electrode formation area in which the source electrode and the drain electrode are formed, after a step of forming the semiconductor layer; and

applying a droplet of an electrode raw material on a drop-on position located in the electrode formation area, so as to form the source electrode and the drain electrode respectively in the electrode formation area, the drop-on positions being off a forming area of the semiconductor layer.

16. The manufacturing method as set forth in Claim 15, wherein the step of preprocessing includes steps of:

forming a wire guide, on the gate insulation layer and the semiconductor layer, along a border of the electrode formation area; and

wetting those parts of the gate insulation layer and the semiconductor layer on which the wire guide is not formed, and dewetting the wire guide.

17. The manufacturing method as set forth in Claim 15, wherein the step of preprocessing includes the step of:

forming, on the gate insulation layer and the semiconductor layer, (i) a wetting area as a source/drain wire formation area in accordance with a desired pattern, and (ii) a dewetting area as a non-source/drain wire formation area in accordance with a desired pattern.

18. The manufacturing method as set forth in Claim 15 wherein:

in the step of preprocessing, the electrode formation area is so formed that at least one of the source electrode and the drain electrode has a branch section at branching-off parts thereof located off a forming area of the semiconductor layer, the branch section including a plurality of branch electrodes on the semiconductor layer, the branch electrodes of a first electrode sandwiching a second electrode where the first electrode is the at least one of the source electrode and

the drain electrode, and the second electrode is the other; and

in the step of applying the droplet, positions respectively corresponding to the branching-off parts are the drop-on positions on which the droplet of the electrode raw material is applied.

19. The manufacturing method as set forth in Claim 15, wherein:

the drop-on positions are so set that the droplet is not applied on the channel section, based on allowance included in on the drop-on positions.

20. The manufacturing method as set forth in Claim 15, wherein:

the drop-on positions are so set that a splash droplet is not adhered on the channel section, based on allowance included in on the drop-on positions.

21. The manufacturing method as set forth in Claim 18, wherein:

each branch electrode is so formed as to have a parallel part being parallel to each other on the semiconductor layer, each branch electrode being linear between the parallel part and the branching-off part.

22. The manufacturing method as set forth in Claim 15, wherein:

in the step of preprocessing, the electrode formation area is so formed that the source electrode and/or the drain electrode has a part that gets gradually wider toward the forming area of the semiconductor layer; and

in the step of applying the droplet, the droplet of the electrode raw material is applied onto the drop-on positions located in the positions from which the part gets gradually wider.

23. The manufacturing method as set forth in Claim 15, wherein:

in the step of preprocessing, the electrode formation area is so formed that, in an area in which the gate electrode exists, parts of the source electrode and the drain electrode respectively extended toward the forming area of the semiconductor layer is parallel to a direction in which the gate electrode is extended.

24. The manufacturing method as set forth in Claim 15, wherein:

in the step of preprocessing, the electrode formation area is so formed that the branch electrodes of the source electrode or the branch electrodes of the drain electrode have

a gap between each adjacent pair of the branch electrode, the gap getting wider as the branch electrodes are extended toward the channel section from the branching-off parts.

25. The manufacturing method as set forth in Claim 15, wherein:

in the step of preprocessing, the electrode formation area is formed (i) so that the source electrode is continuous with a source wire via a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part, the source transition part and the drain transition part being located off a forming area of the semiconductor layer, and (ii) so that the source transition part gets narrower toward the source wire associated therewith, and/or the drain transition part gets narrower toward the drain wire associated therewith; and

in the step of applying the droplet, the droplet of the electrode raw material is applied on the source transition part and the drain transition part as the drop-on positions.

26. The manufacturing method as set forth in Claim 15, wherein:

in the step of preprocessing, the electrode formation area is formed (i) so that the source electrode and the drain electrode are formed on the semiconductor layer, which is

substantially circular and provided on the linear gate wire, the semiconductor layer partially covering the linear gate wire, and sandwiching the gate insulation layer with the linear gate wire, and (ii) so that the source electrode is continuous with a source wire via a source transition part, and the drain electrode is continuous with a drain wire via a drain transition part, and the source transition part and the drain transition part is located off a forming area of the semiconductor layer; and

in the step of applying the droplet, the droplet of the electrode raw material is applied on the source transition part and the drain transition part as the drop-on positions.

27. The manufacturing method as set forth in Claim 15, wherein:

a diameter of the droplet applied on one of the drop-on positions is larger than a width of the source electrode or the drain electrode.

28. The manufacturing method as set forth in Claim 18, wherein:

a ratio between a width of the branch electrodes included in the branch electrode section and a diameter of the droplet applied on one of the drop-on positions is one to two substantially.

29. A manufacturing method of a liquid crystal display apparatus including a manufacturing method of a thin film transistor, wherein:

the manufacturing method of the thin film transistor, including (i) a semiconductor layer on a gate electrode, (ii) a gate insulation layer between the semiconductor layer and the gate electrode, (iii) a source electrode and a drain electrode on the semiconductor layer, and (iv) a channel section between the source electrode and the drain electrode, the manufacturing method of the thin film transistor comprises the steps of:

preprocessing so as to form an electrode formation area in which the source electrode and the drain electrode are formed, after a step of forming the semiconductor layer; and

applying a droplet of an electrode raw material on a drop-on position located in the electrode formation area, so as to form the source electrode and the drain electrode respectively in the electrode formation area, the drop-on positions being off a forming area of the semiconductor layer.